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A
JOURNAL
OF
NATURAL PHILOSOPHY, CHEMISTRY, AND THE ARTS.

By WILLIAM NICHOLSON.

LONDON, *Jan.* 1, 1799.

AT the beginning of the year 1797, the Author circulated a Proſpectus of this Journal, of which the object is to collect and diſſeminate the Tranſactions of Philoſophers, Chemiſts, and Manufacturers, with ſpeed and preciſion. He adverted ſtrongly to the candid and moſt reſpectable practice of the Continental Journaliſts, who perſonally own the periodical works of which they undertake the direction; and profeſſed his intention to adopt a mean ſo well calculated to inſpire confidence, to inſure fidelity, and to render his work deſerving of the correſpondence and quotation of other Authors of credit. He gave a ſketch of the plan he meant to purſue, and the ſources of information to which he intended to recur; at the ſame time that he profeſſed the moſt delicate and inviolable regard to the rights of thoſe ingenious men to whom Society is indebted for the progreſs of invention. The actual publication of his Journal, for twenty months paſt, has now enabled him to take a retroſpective view of the ſame object. It will be ſeen that he has invariably adhered to that fidelity of quotation and reference to his authorities which formed part of his engagement with the Public; a tranſaction too ſimple to deſerve remark, if the deceptive pretenſion to originality had not ſeduced the Editors of other periodical works to depart from ſo evident a duty. He has accordingly had the ſatisfaction of ſeeing his Journal diſtinguiſhed as a work of authority by the Authors of the moſt valuable Philoſophical Publications*, as well as by the communications of men of the firſt eminence *. The Table of Contents of the Firſt Volume will ſhew that *nearly half the materials are original, and highly intereſting*; *that above one third part conſiſts of new and important Memoirs, which never before appeared in our language*; *and that the remaining part conſiſts of Abridgments or Select Papers from Academical Collections, or ſuch expenſive Works as are confined to the poſſeſſion of a very few individuals.*

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* *C. Hatchett*, Eſq. in the Philoſ. Tranſactions for 1798—*Guyton*, *Adet*, and the other Authors of the Annales de Chimie, *paſſim*—Profeſſor *Pictet*, in his Bibliotheque Britannique —Journal

This Work already contains *Forty-three Plates of the quarto ſize, or larger*, with a conſiderable number of uſeful Tables. If the limits of a ſhort Addreſs to the Public could admit of a full recapitulation of the numerous Diſcoveries he has been enabled to communicate to his Readers, it would afford the moſt agreeable and convincing proof that Sciences have not ſlept during the preſent times of ſevere conteſt. But he muſt neceſſarily condenſe his obſervations, and confine them to the immediate purpoſe they are intended to anſwer. To expreſs his acknowledgments to the Public, and to his Correſpondents, for the encouraging proofs they have given of their conviction of the utility of his undertaking—and to extend that utility by more widely diffuſing the information that ſuch a Repoſitory is encouraged and ſupported, are the leading objects of the preſent Addreſs. With theſe views he will rapidly enumerate ſome of the moſt prominent articles which have appeared in the Philoſophical Journal during the ſhort period of its publication.

OPTICS.—Dr. *Blair*'s Method of making perfect Lenſes by means of Fluids. An Examination of the Cemented Lenſes of the French. Extenſive experimental Inveſtigation of the Means by which the Eyes of all Animals are adjuſted to diſtant Viſion.

LIGHT and COLOURS.—Very brilliant Solar Spectrum produced by the Paſſage of Light through Cloth. Count *Rumford*'s Experiments on the Variation of the actual Perceptions of Colours from mere Contraſt. *Brougham*'s numerous Diſcoveries on the Reflexion, Refraction, Inflexion, and Deflexion of Light. *Huddart*'s Obſervations on the ſingular Appearance of Objects affected by aërial Refraction. The Phenomenon of Looming at Sea. Ac-

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—Journal des Savans—American Repertory—Mancheſter Memoirs—Dr. *Delamatherie* in the J. de Phyſique—*Thomſon*, in his valuable Notes to the late Edition of Fourcroy—and the Authors of the Analytical Review, who, after giving an account of many of the original Papers in the Firſt Volume, conclude by obſerving, "*that this Philoſophical Journal is not a haſty* "*compilation of ſuch materials as the Editor could moſt readily lay hold of, but an able, judi-* "*cious, and well-meant endeavour to propagate and improve ſcientific knowledge.*"

* Among theſe it may be ſufficient to mention the worthy Preſident of the Royal Society, the Rt. Hon. Sir *J. Banks*, Bart. &c Sir *Geo. Mackenzie*, Bart. Sir *James Hall*, Bart. Col. *Haldane*, Drs. *Pearſon*, *Duncan*, *Scherer*, *Kennedy*, *Mitchill*; Meſſ. *Hatchett*, *Ramſden*, *Cavallo*, *Cuthbertſon*, *Sadler*, *Kier*, *Cruickſhank*, &c.

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count of the *Fata Morgana;* or the Optical Appearance of ſtrange Figures in the Air and Sea in the Bay of *Reggio.* New Phenomena of the Newtonian Fits of Reflexion and Tranſmiſſion of Light.

ELECTRICITY.—Spinning Inſtrument for condenſing Electricity. New Machines by *Van Marum* and Mr. *Pearſon.* Electrical Undulation. Col. *Haldane*'s new Method of meaſuring the Charge. Inveſtigation of the Means employed by the *Torpedo* and other Fiſh to give the Shock. Remarkable Colours of Clouds during a Thunder Storm. A new Electrometer. Fairy Rings. *Cuthbertſon*'s Diſcovery of a Meaſure of the comparative Power of Electrical Machines.

MANUFACTURING PROCESSES.—Much experimental Information on the Art of Printing by Cylinders. *Bramah*'s new Preſs, operating by Water inſtead of the Screw. Profeſſor *Wilſon*'s Art of indefinitely multiplying the Copies of Engravings. Theory and Proceſs of the new and ſpeedy Method of Tanning, by *Seguin* and others. Bleaching of Silk by Acid and Alcohol; and of Cottons, &c, by the Oxygenated Muriatic Acid. Soap of Wool and many other new Saponaceous Combinations. Probability of rendering Tallow Candles equal to Wax. Numerous Facts, Obſervations, and Theoretical Deductions on the Converſion and Fabrication of Steel; Caſt Steel; German Steel; Styrian Steel; Damaſcus Steel, &c. &c. New Diſcoveries reſpecting Pruſſian Blue and the Art of Dyeing, by Prouſt. Very ſpeedy Proceſs uſed in France for accurately refining Saltpetre. Beautiful Cinnabar produced in the Humid Way by C. Muſſin Puſchin. Purification of the Acid of Lemons. Making of Turnſole. Mechanical Fabrication of Files. Gren's eaſy Method of rendering Common Salt very pure. New Dyeing Wood called Paraguatan. Methods of aſcertaining the Purity of Drugs.

INSTRUMENTS and MACHINES.—Comparative Reſults of *Baumé*'s Hydrometer. All the Methods of preventing Time-pieces from being affected by Change of Temperature. Accounts of the Crown Wheel, Anchor, Free, Horizontal, Graham's, Mudge's, and other Eſcapements for Clocks and Watches. New Inſtruments for finding Specific Gravities; the Floating Gravimetre by *Guyton,* and a Kind of Mercurial Barometer by *Say.* The Methods of making original Screws for meaſuring with extreme Accuracy. Compariſon of the Plumb Line and Spirit Level. Globules for Microſcopes. Very ſimple Eudiometer with Sulphate of Potaſh. Apparatus for Freezing Proceſſes. New Air Pumps by *Cuthbertſon, Prince, Sadler,* and Sir *G. Mackenzie,* Bart. The moſt ſteady Conſtruction of the Mariner's Compaſs. Portable Gunter's Rule equivalent to Forty Feet in Length. New Apparatus for the Combuſtion of Hydrogen with Oxygen, by *Cuthbertſon.* Portable Laboratory, by *Guyton.* Furnace for producing Oxygen Gas, by *Sadler.* *Pearſon*'s Satellitian to exhibit the Appearance of Jupiter's Moons Succeſsful Method to obtain an Overflowing Well, by Mr. *Vulliamy.* Full Accounts of Steam Engines on the *Marquis of Worceſter*'s Principle, and the Improvement with the Lever, with Drawings of new Engines, on both Principles. New Invention of Metallic Stuffing examined. Schemes of Biſhop *Wilkins* and others for producing a Perpetual Motion. Telegraphs, by *R. L. Edgeworth,* Eſq.

CHEMISTRY.—Diſcovery of a Gas which forms Oil by the Addition of Oxygenated Muriatic Acid Gas. Methods of rendering Alkalis extremely pure, by *Lowitz* and *La Grange.* Artificial Rock Cryſtal, by *Trommſdorff.* *Pearſon*'s Experiments on the Gas produced from Water by Electricity. *Guyton*'s commodious Eudiometer with Sulphuret. *Cruickſhank*'s Experiments

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on the Formation of Sugar; its Converſion into Gum, &c. Dr. *Falconer*'s Hiſtory of Sugar. True Theory of Ether aſcertained by *Fourcroy* and *Vauquelin*. Non-exiſtence of the Sydney Earth of *Wedgwood* proved by *Klaproth* and by *Hatchett*. Gaſeous Solutions of Phoſphorus, by *Brugnatelli*. Curious Experiments on Pruſſiates and the Oxidation of Iron, by *Prouſt*. *Kirwan*'s Determination of the Carbon in Mineral Coal. *Pelletier*'s Examination of Strontian Earth. Pure Barytes and its uſeful Properties. *Guyton* on the Acid of Tin. Dr. *Scherer*'s Account of the Controverſy on the Light of Phoſphorus in Azote. *Dizé*'s Preparation of the Concrete Acid of Lemons. *Carradori*'s Account of Natural Phoſphori. A Statement of the true Effect of Tin upon Gold, by *M. Tillet*. Diſcovery of the new Metallic Acid denominated *Chrome*, by *Vauquelin*. *Guyton*'s new Proceſs for obtaining the moſt excellent Colours from Vegetables. Deſcription and Account of the Elaſtic Bitumen, by *C. Hatchett*, Eſq. *Henry*'s Experiments to determine the Simplicity or the Compound Nature of Carbon. Account of a remarkable Conſequence of Compound Elective Attraction, by *Guyton*. Diſcoveries of a new Earth in the Beryl, by *Vauquelin*; of a new Metal called *Tellurium*, by *Klaproth*; and a new Animal Acid, by *Guyton*. Sir *James Hall*'s Diſcovery of the Cauſe why Lavas poſſeſs the ſtony and not the vitreous Character, &c. &c.

HEAT.—Much curious and intereſting Matter will be found reſpecting this important Agent. The total Abſorption of Heat by means of Tallow on a Grindſtone;—the natural Explanation of the cold Winds iſſuing from the Earth, which is deduced from the modern Doctrine;—the univerſal and happy Explanation of the Phenomena of Winds, of Currents in the Sea, of the Equalization and Preſervation of Heat from the imperfect conducting Powers of Fluids, by Count *Rumford*;—the ſurpriſing Experiment of boiling ſome Gallons of Water by the mere Friction of two Metals, by the ſame Philoſopher;—his Experiments on Gunpowder;—the powerful Freezing Proceſſes of *Walker*;—and the ſpontaneouſly-moving Lamp of Profeſſor *Wilſon*, are among the Objects of Reſearch which muſt highly intereſt the Philoſopher, but cannot be enlarged upon in this Place.

The ſame indiſpenſable Attention to Brevity demands that a few only of the remaining Objects, afforded by the Activity of the Philoſophical World and the Encouragement of Correſpondents, ſhould be here mentioned and pointed out, without attending either to Order or Arrangement. Among theſe are the Aſtronomical Syſtem of *Laplace*; *Herſchel*'s Diſcovery of Four new Satellites to the *Georgium Sidus*; Solar Tranſit of a Comet; uncommon Phenomena of Water Spouts; a Variety of Papers relative to the Animal Economy and to Natural Hiſtory; Accounts of the French Weights and Meaſures, with Tables expreſsly calculated for this Work; the relative Values of Proviſions and Money for the laſt Seven Centuries; Inveſtigation of the beſt Figure of Coinage; Account of a Magnetic Mountain; Method of making Artificial Magnets; various Geological and Geographical Memoirs, among which are, *Aikin*'s Account of North Wales and the great *Angleſea* Copper Mines, *Spallanzani*'s Deſcription of *Scylla* and *Charybdis*, *Imrie*'s Account of the Foſſil Bones in the Rock of *Gibraltar*, *Rennell*'s elaborate Obſervations on the phyſical and political State of North Africa, and *Park*'s Travels in that intereſting Tract. The new and uſeful Reſearches of *Venturi* into the lateral Motion of Fluids. Hiſtorical Documents from the Manuſcripts of *L. de Vinci*, *Plutarch*, &c. concerning the principal Aſtronomical and Philoſophical Diſcoveries attributed to the Moderns. Experiments and Obſervations on Sound, the Variety of Voices, and other Objects of Phonics. Hiſtory of the Art of Univerſal Writing, as propoſed by Lord *Bacon*, *Deſcartes*, *Wilkins*, *Leibnitz*, and other eminent Men, &c. &c.

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